

REMARKS

Claim Status

Claims 1-21 are pending in this application, of which claims 1, 6, 12, 17 and 21 are independent. Claims 6-11 and 17-21 have been withdrawn.

Claims 1 and 12 have been amended to correct informalities in the claim language and to more clearly define the present subject matter. Support for the amendment is found, for example, at page 4, line 1 of the specification. No new matter has been added.

Patentability under 35 U.S.C. § 103

Claims 1, 12 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sung (US 2005/0019114) in view of Meng (US 2003/0039603). Claims 2, 3, 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sung and Meng in view of Swain. Claims 4, 5, 15 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sung, Meng and Swain and further in view of Akaishi (WO 2004/046062). Applicant respectfully traverses these rejections for at least the following reasons.

Regarding independent claims 1 and 12, Applicant respectfully submits that none of the cited references disclose or suggest that “a particle of said diamond includes at least 100 ppm and at most 1,000 ppm of boron,” as recited by claim 1, or “a particle of said diamond includes at least 1,000 ppm and at most 100,000 ppm of boron,” as recited by claim 12. In rejecting claims 1 and 12, the Examiner asserted that Meng, at paragraph [0016], discloses these limitations. Specifically, the Examiner stated that “[t]he amount of boron used can be between 0.001 to 0.6% (para. 0016).” Applicant disagrees.

Paragraph [0016] of Meng states as follows:

[0016] The initial step of the process commences with formation of a uniform mixture of boron and graphite. Diamond seed crystals can be used as is well known in the art. The amount of boron will range from about 0.1 to about 0.5 weight-% of the total core composition with about 0.15 wt-% presently preferred. Sources of boron include, inter alia, B₄C in a range of from about 0.1 to about 0.5 wt-% with 0.25 wt-% being preferred; Fe-B alloy in a range to provide a B content of from about 0.1 to about 0.5 wt-%; metallic boron and amorphous B powder in a range of from about 0.1 to about 0.5 wt-% with about 0.15 wt-% being preferred. The presently preferred source of B is amorphous B having a particle size from about 5 µm to -80 mesh in size. Again, the lower limit is more dictated by handling considerations, especially at commercial scale operations.

Applicant submits that it is clear that paragraph [0016] of Meng refers to the amount of boron in the source material and does not disclose the amount of boron in the resultant diamond particles.

Further, it is clear that paragraph [0016] of Meng does not disclose the range of 0.001 to 0.6%.

As such, the Examiner's assertion has no factual basis. Applicant submits that it is clear that Meng fails to disclose the above limitations of claims 1 and 12.

Further, Applicant submits that it would not have been obvious to include boron into diamond in the amount of at least 100 ppm and at most 1,000 ppm, or at least 1,000 ppm and at most 100,000 ppm. In Sung, nanodiamond and non-diamond carbon materials such as fullerenes are utilized as starting materials. The component of the substrate including solvent metal contacts the starting materials through micron-size diamond. Sintering is performed at low temperature and pressure by using dissolution-precipitation reaction of diamond and graphite due to solvent metal diffusing from the substrate. In Sung, however, since the dissolution-precipitation reaction is utilized for adding boron into the diamond sintered body, an amount of boron added into the diamond sintered body would be limited to a small amount. Similar to Sung, Meng also utilizes dissolution-precipitation reaction for adding boron into the diamond, and thus the amount of boron would be limited to a small amount.

In contrast, in the present disclosure, a graphite-type carbon material including boron as a **solid solution** is utilized as a source material, and the graphite-type carbon material is directly

converted into diamond. Accordingly, it is possible to include a large amount of boron (100-100,000 ppm) into the diamond sintered polycrystalline body. None of the cited references disclose or suggest the use of a graphite-type carbon material including boron as a **solid solution**, as recited by amended claims 1 and 12. Thus, the claimed range of the boron amount would not have been obvious over the cited references.

Based on the foregoing, claims 1 and 12 and all claims dependent thereon are patentable over the cited references. Applicant requests that the Examiner withdraw the rejections of the claims under 35 U.S.C. § 103.

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicant submits that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicant's attorney at the telephone number shown below:

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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